



## California Energy Commission

### '95 STANDARDS OVERVIEW

The reason you have not seen a **Blueprint** Newsletter in several months is because Energy Commission staff (particularly the newsletter editor) were revising the **Energy Efficiency Standards**. The 1995 standards were adopted by the Energy Commission and California Building Standards Commission (CBSC), and staff are now focusing on revising the compliance manuals to reflect the standards' amendments. The effective date for the 1995 standards is July 1, 1995.

#### How Big Are the Changes?

The Commission considered amendments to correct errors, inconsistencies and implementation problems with the 1992 **Energy Efficiency Standards**. Only the most serious problems or easily corrected errors were selected. The issues, identified through phone calls and letters to the Commission and by staff, were finalized at the "scoping" hearing.

#### When Did All this Happen?

Following the hearing to determine the scope of the standards (October 28), 45-day language was filed with CBSC and sent out for public review (December 21). The 45-day language (also called express terms) consists of the actual language changes, in underline/strikeout format, proposed for adoption 45 or more days later. Following two more hearings (January 25 and February 22), additional minor changes were needed, and 15-day language was released on March 10.

### The Approval Process

The adoption hearing at the Energy Commission took an unprecedented 20 minutes. There was no controversy and several key organizations supported the amendments, including California Building Officials (CALBO), California Building Industry Association (CBIA), California Association of Building Energy Consultants (CABEC), American Institute of Architects (AIA), and Concrete Masonry Association of California and Nevada. CBIA also obtained the support of the California Chamber of Commerce, Business Properties Association, Housing Council and Apartment Association, the American Forest and Paper Association, and Pardee Construction Company. CBIA strongly supported the amendments because they provide regulatory stability through 1998; and CABEC supported the amendments because they represent an improvement.

Following the comments in support of the amendments, the Commissioners unanimously approved the proposed amendments.

#### Key Dates

March 30, 1994 - Commission adoption

May 16, 1994 - CBSC approval

June 1994 - Submit to International Conference of Building Officials (ICBO) for publication

January 1995 - ICBO publication

July 1, 1995 - Effective date

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## Related Compliance Proceedings

Staff are conducting public workshops to develop the corresponding changes to the compliance manuals. Our intent is to have the manuals complete in Fall 1994. You will receive a notice when the manuals are available.

The Efficiency Standards Committee, Commissioners Art S. Kevorkian and Jananne Sharpless, are conducting a separate proceeding to consider changes to the administrative portion of the standards that can improve compliance and enforcement. The first hearing was held in February. You must be on the "interested parties" mailing list to receive further notices. Call Dee Anne Ross at (916) 654-4098 for information regarding the responsibilities associated with being on this mailing list call.

## RESIDENTIAL STANDARDS

### '95 Standards Overview

- An existing residential structure with R-11 wall insulation which is showing compliance (e.g., garage conversion) can do so with a performance approach (points or computer) without having to meet the otherwise mandatory requirement for R-13 wall insulation.
- Steel frame structures must show equivalence to wood frame structures for meeting mandatory envelope (floor, walls, roof/ceiling) insulation requirements. (This is a clarification of intent.)
- Additions involving an increase in the number of water heaters will be able to show compliance for the addition alone under certain conditions.
  - The new water heater is either:
    - (1) gas storage non-recirculating, 50 gallons or less, with R-12 external insulation; or
    - (2) if there is no natural gas connected to the building, electric storage, 50 gallons or less with an energy factor of 0.90 or greater; or
    - (3) a system that uses equal or less energy than (1) above, or

natural gas connected to them.

- No penalty/no credit is taken for water heating ("standard" system modeled in computer program, 0 points in point system, no compliance with water heating budget needed in package approach).
- Additions containing dual-glazed skylights or greenhouse windows can assume these products have the U-value required by Package D or E.
- Alterations containing dual-glazed skylights or greenhouse windows can assume these products meet the U-value required (if any) for an alteration. NOTE: The Blueprint No. 46 interpretation regarding when the 0.75 U-value requirement in Section 152(b) applies is still relevant.
- Dual-glazed greenhouse windows are defined as adding conditioned volume, but not conditioned floor area.

## NONRESIDENTIAL STANDARDS

### '95 Standards Overview

#### ***Envelope***

- The special construction requirements for drop ceilings is removed.
- Demising walls must have R-11 insulation regardless of the compliance approach (previously required only in prescriptive compliance).
- Clarification that glass in demising walls is not figured into compliance calculations.

#### ***Lighting***

- When an automatic time switch control device is used to meet lighting shut-off requirements in retail stores and associated malls, restaurants, grocery stores, churches and theaters, the "holiday shut-off feature" is not required.
- Two exceptions were added where automatic time switch control devices control lights in the following occupancies: malls and arcades, auditoriums, single tenant retail spaces, industrial facilities, and arenas.

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- If captive-key override is used, there is no two-hour override time limit. [Captive-key override is defined as a type of control where the key which activates the override cannot be released while lights are in the “on” position.]
- The area controlled by the device can be up to 20,000 square feet (rather than the current 5,000 square foot limit).

### Mechanical

- Mechanical systems using automatic time switch control devices to meet shut-off requirements do not need to be equipped with “holiday shut-off feature.”
- Ventilation requirements clearly state how to determine the number of occupants for calculating outside air requirements. Spaces with fixed seating determine the expected number of occupants in accordance with the **Uniform Building Code**. (This is not a change in intent. Spaces with fixed seats are frequently fully occupied.)
- High-rise residential dwelling units must be equipped with setback thermostats.
- Fan energy caused solely by process loads is not counted when determining if the power consumption of fans is greater than 25 horsepower. (This is not a change in intent, but will be explicitly stated.)

### Additions/Alterations

- Additions or alterations in buildings with existing variable air volume systems with electric reheat can expand by ≤50% for additions/≤20% for alterations without having to meet limits on electric resistance.
- Equipment may be moved without having to comply with all mandatory requirements.

## CURRENT STANDARDS

### Steel Framing

- For documenting compliance on a steel framed *residential* structure you can use the U-values from **Nonresidential Manual** Table B-2 (Appendix B). This

without rigid insulation.

- Tables for steel framed structures (both residential and nonresidential) have been expanded and are included with this issue of **Blueprint**. Tables G-16 and G-18 of the **Residential Manual** are revised to include steel frame construction, and Table G-20 is expanded. An expanded Table B-2 of the **Nonresidential Manual** is also included. This supplement to Table B-2 includes more assemblies, including steel framing, with rigid insulation (values from Table B-2 can also be used in residential compliance calculations).
- The new EZFRAME program (P400-94-002, \$14) can be used to calculate assembly U-values for steel frame structures. The output is suitable for residential and nonresidential compliance.
- The EZFRAME program requires web thickness in inches, but a more common value is gauge. Below is a table for converting gauge into inches of thickness.

Gauge	Thickness (inches)	Gauge	Thickness (inches)
12	.1046	22	.0299
14	.0747	24	.0239
16	.0598	26	.0179
18	.0478	28	.0149
20	.0359		

### DID YOU KNOW?

•••The Commission is participating in the California Association of Building Energy Consultants’ Annual Conference set for July 29-30 in Santa Cruz. The Commission will participate at the conference and have a booth as part of the mini-trade show. Scheduled topics for the conference are the National Energy Policy Act, current glazing technology, metal studs and their implications for compliance work, and lighting controls. To register contact CABEC at (916) 974-1045. For conference information contact Lynette Sergius at (408) 335-3656.

•••California Building Codes Institute is planning to hold the plans examiner

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certification exam in late September (residential) and November (nonresidential). Contact CBCI for more information at (916) 456-3824.

- The EASY CALC program is now called REA. REA is certified for showing compliance with the residential energy standards.

- Effective for permit applications made after March 30, 1994, CALRES2 Version 1.30 is decertified. For permit applications made after this date, Version 1.31 must be used. All CALRES2 purchasers were sent Version 1.31.

- The fenestration directory is available from the National Fenestration Rating Council. Send a \$10 check payable to NFRC at 1300 Spring Street, Suite 120, Silver Spring, MD, 20910, along with your request for NFRC Certified Product Directory.

- The Commission obtains technical expertise via contracts to support development, implementation and valuation of building energy standards. If you are interested in bidding on these contracts, contact the Commission's Contracts Office at (916) 654-4392.

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## RESIDENTIAL MANUAL

Table G-16: Standrard U-values of  
Wood & Metal Frame Roofs and Ceilings

Ceiling Insulation	Framing Spacing	Reference Name	U-value Wood	U-value Metal
R-0	16" o.c.	R.0.2X6.16	.299	.299
R-0	24" o.c.	R.0.2X4.24	.306	.306
R-11	16" o.c.	R.11.2X6.16	.077	.118
R-11	24" o.c.	R.11.2X4.24	.076	.155
R-13	16" o.c.	R.13.2X6.16	.069	.109
R-13	24" o.c.	R.13.2.X4.24	.068	.151
R-19	16" o.c.	R.19.2X8.16	.051	.090
R-19	24" o.c.	R.19.2X4.24	.047	.067
R-22	16" o.c.	R.22.2X10.16	.044	.081
R-22	24" o.c.	R.22.2X4.24	.041	.057
R-30	16" o.c	R.30.2X12.16	.036	.073
R-30	16" o.c	R.30.2X12.16	.035	.069
R-30	24" o.c.	R.30.2X4.24	.031	.039
R-38	16" o.c	R.38.2X12.16	.029	.064
R-38	16" o.c	R.38.2X14.16	.028	.061
R-38	24" o.c.	R.38.2X4.24	.025	.030
R-49	16" o.c	R.49.2X4.16	.019	.023
R-49	24" o.c.	R.49.2X4.24	.019	.022